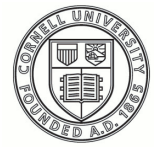

11-2008

Notions of Knowledge Management

Olivier Serrat
Asian Development Bank

Notions of Knowledge Management

Abstract

{Excerpt} Knowledge management is getting the right knowledge to the right people at the right time, and helping them (with incentives) to apply it in ways that strive to improve organizational performance.

Data are facts, and information is interpreted data. Knowledge is created and organized by flows of information, shaped by their holder. It is tacit or explicit. Tacit knowledge is nonverbalized, intuitive, and unarticulated knowledge that people carry in their heads. It is hard to formalize and communicate because it is rooted in skills, experiences, insight, intuition, and judgment, but it can be shared in discussion, storytelling, and personal interactions. It has a technical dimension, which encompasses skills and capabilities referred to as know-how. It has a cognitive dimension, which consists of beliefs, ideals,values, schemata, or mental models. Explicit knowledge is codified knowledge that can be expressed in writing, drawings, or computer programs, for example, and transmitted in various forms. Tacit knowledge and explicit knowledge are mutually complementary forms of meaning.

Keywords

Asian Development Bank, ADB, poverty, economic growth, sustainability, development

Comments

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Knowledge Solutions

November 2008 | 18

Notions of Knowledge Management

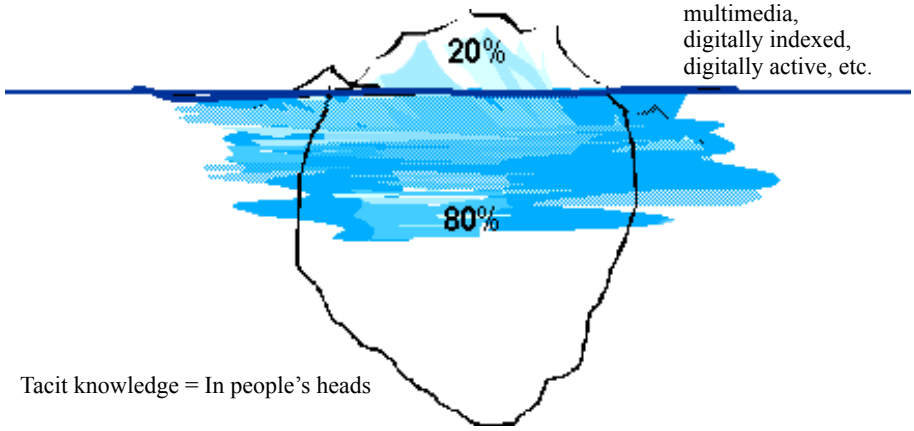
by Olivier Serrat

Knowledge management is getting the right knowledge to the right people at the right time, and helping them (with incentives) to apply it in ways that strive to improve organizational performance.

What is Knowledge?

Data are facts, and information is interpreted data. Knowledge is created and organized by flows of information, shaped by their holder. It is tacit or explicit. Tacit knowledge is nonverbalized, intuitive, and unarticulated knowledge that people carry in their heads. It is hard to formalize and communicate because it is rooted in skills, experiences, insight, intuition, and judgment, but it can be shared in discussion, storytelling, and personal interactions. It has a technical dimension, which encompasses skills and capabilities referred to as know-how. It has a cognitive dimension, which consists of beliefs, ideals, values, schemata, or mental models. Explicit knowledge is codified knowledge that can be expressed in writing, drawings, or computer programs, for example, and transmitted in various forms. Tacit knowledge and explicit knowledge are mutually complementary forms of meaning. Figure 1 exemplifies the iceberg metaphor used to describe the hidden nature of tacit knowledge.

Figure 1: Knowledge Assets



Source: Author.

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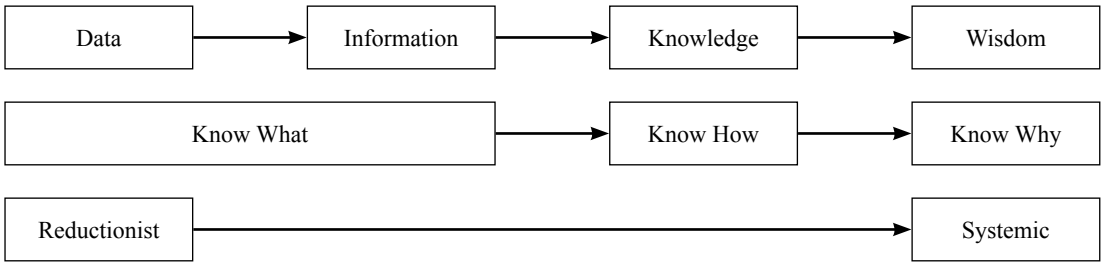
Model of Learning Progression

Forms of meaning such as data and information are more rudimentary than knowledge. Knowledge is more rudimentary than wisdom. Data and information are associated with forms of knowing that are specific and limited. Knowledge is systemic and integrates reason, values, intellect, and intuition. The typical model of learning progression locates knowledge in relation to other forms of meaning. Figure 2 describes stages in human learning.

Figure 2: Model of Learning Progression

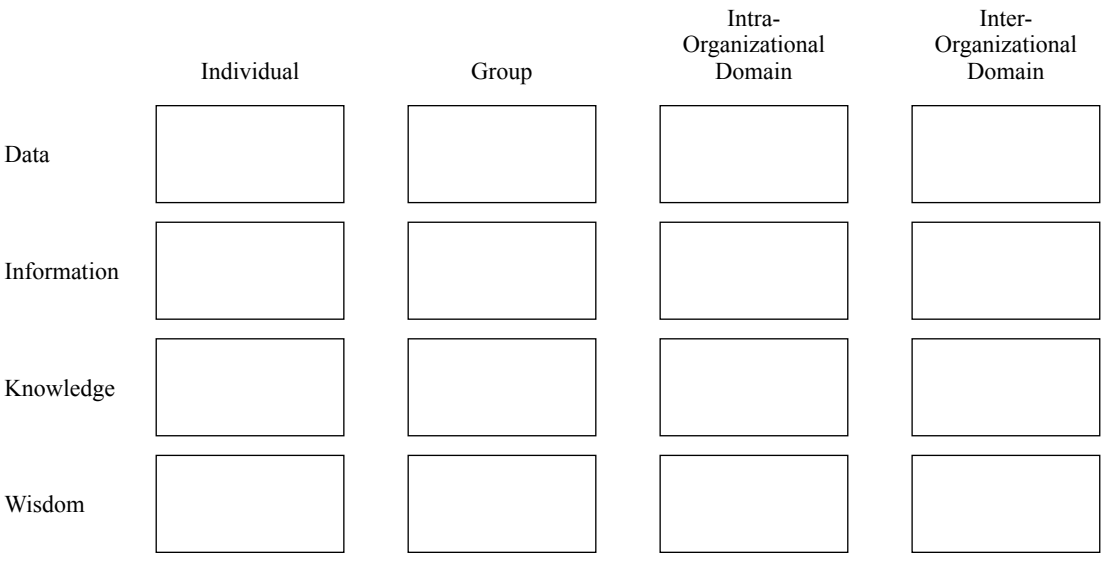


Source: Author.

Knowledge Agents

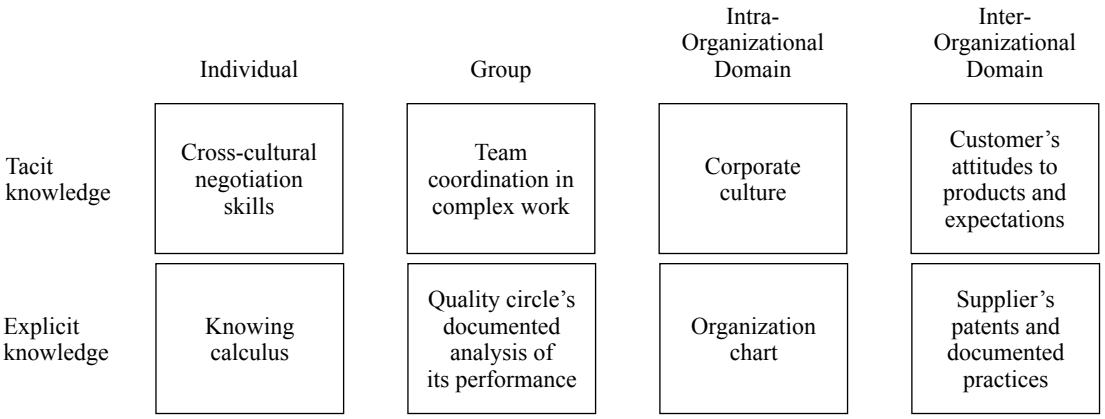
Most models of knowledge management assume four agents of knowledge, namely the individual, the group, the organization, and the inter-organizational domain. They view knowledge and its creation as a spiral process from the individual to the group, the organization, and sometimes the inter-organizational domain. Figure 3 shows that each agent holds distinct forms of knowledge and performs work that the others cannot. Figure 4 reveals how knowledge is generated by interplay.

Figure 3: Knowledge Agents



Source: Author.

Figure 4: Knowledge Management Model



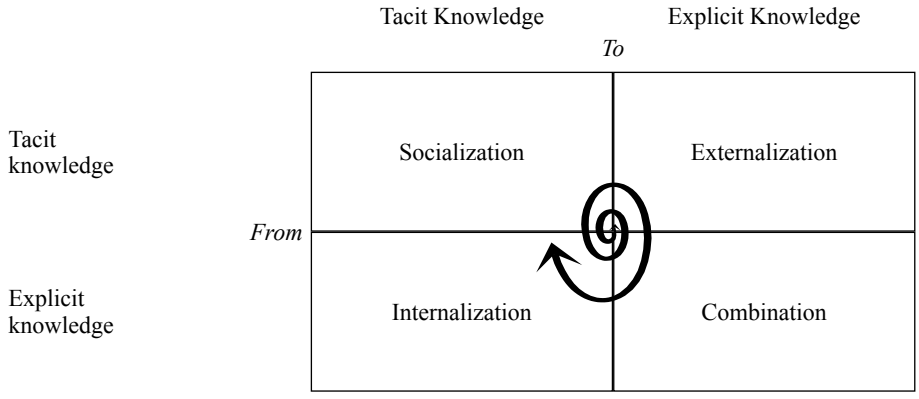
Source: Hedlund, G. and Nonaka, I. 1993. Models of Knowledge Management in the West and Japan. In Lorange, P. et al, eds. *Implementing Strategic Processes: Change, Learning, and Cooperation*. Macmillan: London.

Modes of Knowledge Creation

In large organizations, knowledge is created through continuous dialogue on tacit and explicit knowledge via four patterns of interactions: **socialization**, **externalization**, **combination**, and **internalization**.

Figure 5 frames the process of knowledge creation. Socialization is the process of creating common tacit knowledge through interactions including observation, imitation, or apprenticeships. Externalization is the process of articulating tacit knowledge into explicit knowledge by means of metaphors, analogies, or sketches. Combination is the process of assembling new and existing explicit knowledge into systemic knowledge such as a set of specifications for the prototype of a new product. Combination involves combining explicit knowledge through meetings and conversations or using information systems. Internalization converts explicit knowledge into tacit knowledge. Externalization converts tacit knowledge into explicit knowledge.

Figure 5: Modes of Knowledge Creation



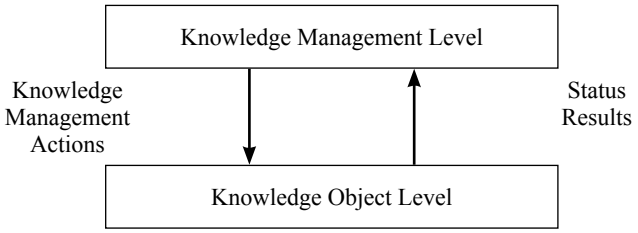
Source: Adapted from Nonaka, Ikujiro. 1994. A Dynamic Theory of Organizational Knowledge Creation. *Organization Science* (5:1), 14–37.

There are five conditions to encouraging the process of knowledge creation: intention, autonomy, creative chaos, redundancy, and requisite variety. Managers must be committed to accumulating, exploiting, and renewing the knowledge base within the organization and be able to create management systems that will facilitate the process. New ideas usually develop at the individual level, rather than at the group or organization levels, and the individuals generating it must be given scope to follow their initiatives. This process of exploration can be encouraged by creative chaos, where flux and crisis cause people to reconsider precepts at a fundamental level. Incentives can then be given to exchange knowledge rather than ration or hoard it. The organization should be made to be conducive to this.

Knowledge Management Levels

Management implies a set of activities directed at an object. Figure 6 defines two aspects of knowledge management: a knowledge management level dealing with a knowledge object level.

Figure 6: Levels in Knowledge Management



Source: Author.

If knowledge is an organizational asset, as resource-based views of organizations suggest, its management will need to live up to objectives that are common to all resources. Typically, these objectives endeavor to make sure that the resource is delivered at the right time, available at the right place, present in the right shape, obtained at the lowest possible cost, and of the required quality. Apart from the question of how to achieve this, it must be understood that knowledge does have properties that set it apart from other resources. It is intangible and difficult to measure, volatile, and embodied in agents with wills. It is not consumed in a process; conversely, it can increase with use. It cannot always be bought on the market; on the contrary, its development can require lead time. It is nonrival in that it can be used by different processes simultaneously. And, its use can have wide-ranging impacts.

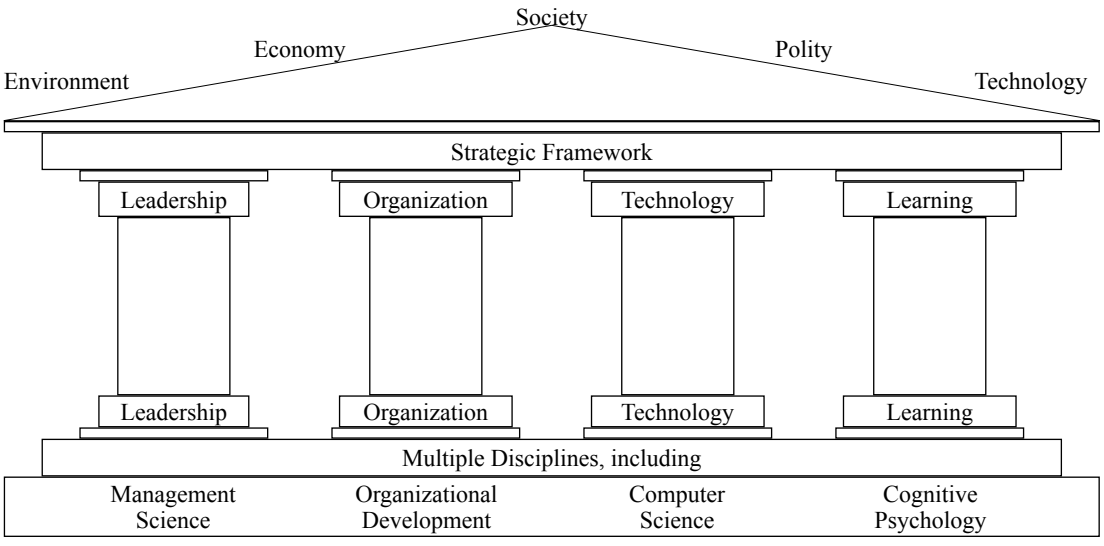
Knowledge Management Architecture

The architecture of knowledge management must be strengthened in support of organization-wide initiatives. Figure 7 shows its four pillars to be leadership, organization, technology, and learning. Figure 8 exemplifies the need to seek balanced interconnectivity.

- **Leadership.** Leadership develops the strategies necessary to position for success in an environment. Those strategies determine vision and must align knowledge management with business tactics to drive the values of knowledge management throughout the organization. Focus must be placed on building executive support. Successful implementation of a knowledge management strategy requires champions at or near the top of an organization.
- **Organization.** Respect for knowledge must pervade an organization. Introducing knowledge management requires organizational change, and knowledge management inevitably acts as a catalyst to transform the organization's culture. The increasing value placed on capable people, rising job complexity, and the universal availability of information on the internet are fundamental changes contributing to attempts to leverage knowledge management solutions. To begin to change an organization, knowledge management must be integrated into business processes and connected to changes in organizational culture.

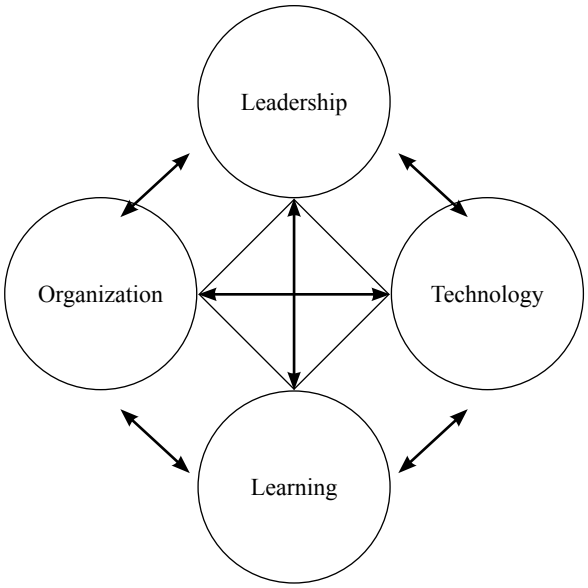
- **Technology.** Knowledge management tools are essential to achieving knowledge management strategies. However, any technical solution must add value to the process and achieve measurable improvements. Properly assessing and defining information technology capabilities is essential, as is identifying and deploying best-of-breed knowledge management tools to match and align with the organization's requirements. Ten processes that must be built collectively make up full-function knowledge management:
  - capture and store,
  - search and retrieve,
  - send critical information to individuals or groups,
  - structure and navigate,
  - share and collaborate,
  - synthesize,
  - profile and personalize,
  - solve or recommend,
  - integrate, and
  - maintain.
- **Learning.** People are responsible for using knowledge management tools in support of organizational performance. Organizational learning must be addressed with approaches such as increasing internal communications, promoting cross-functional teams, and creating a learning community. Learning is an integral part of knowledge management. In this context, learning can be described as the acquisition of knowledge or a skill through study, experience, or instruction. Organizations must recognize that people operate and communicate through learning that includes the social processes of collaborating, sharing knowledge, and building on each other's ideas. Managers must recognize that knowledge resides in people and that knowledge creation occurs through the process of social interaction.

Figure 7: Knowledge Management Architecture



Source: Adapted from Stankosky, Michael 2000. A Theoretical Framework. *KM World*. Special Millennium Issue.

Figure 8: Balanced Knowledge Management

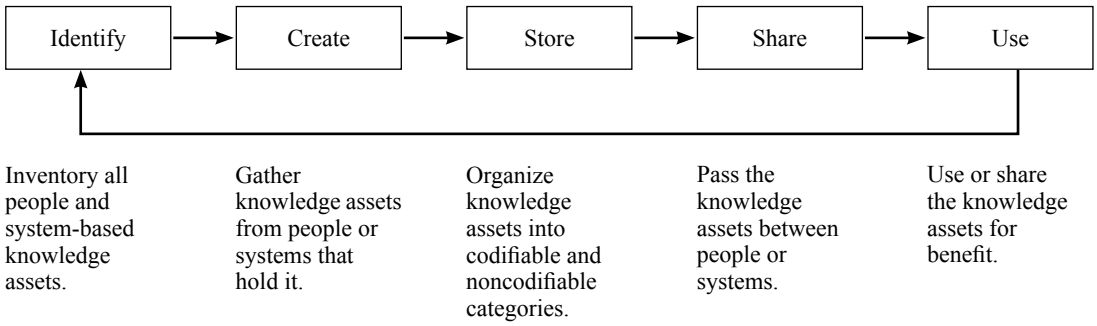


Source: Author.

Core Knowledge Activities

Knowledge management activities can be described in relation to many different disciplines and approaches but almost all focus on five basic activities: identify, create, store, share, and use. Figure 9 interprets the routine associated with core knowledge activities.

Figure 9: Core Knowledge Activities



Source: Author.

Knowledge Management Activities

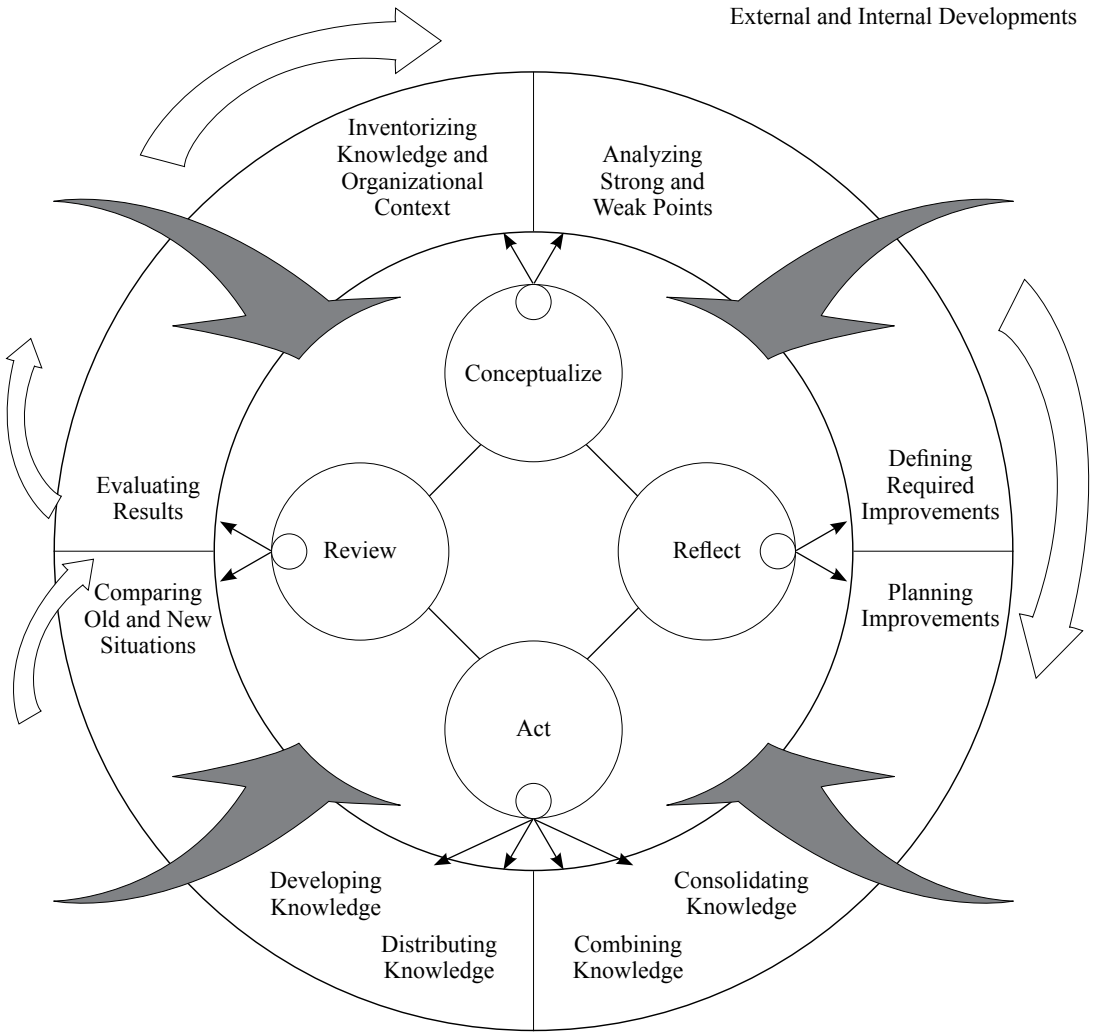
Treating knowledge as a resource opens up promising opportunities for knowledge management activities. These can be split into four categories, each impacting a particular time segment of the knowledge management cycle. They relate to reviewing, conceptualizing, reflecting, and acting.

Reviewing involves checking what has been achieved in the past and what the current state of affairs is. Conceptualizing entails sitting back, trying to grasp the state of knowledge in the organization, and analyzing the strong and weak points of its knowledge architecture. Reflecting calls for directing toward improvements

by selecting the optimal plans for correcting bottlenecks and analyzing them for risks that might accompany their implementation. Acting is the actual effectuation of the plans selected. Figure 10 delineates the knowledge management cycle and the methods and techniques that drive it.

Most of the time, the actions will be one or a combination of generic operations that involve developing knowledge, i.e., buying knowledge, establishing learning programs; distributing knowledge, i.e., channeling knowledge to the points of action, preparing manuals, connecting networks; combining knowledge, i.e., finding synergies, reusing existing knowledge; and consolidating knowledge, i.e., preventing knowledge from disappearing, instituting tutoring programs, establishing knowledge transfer programs.

Figure 10: Knowledge Management Cycle



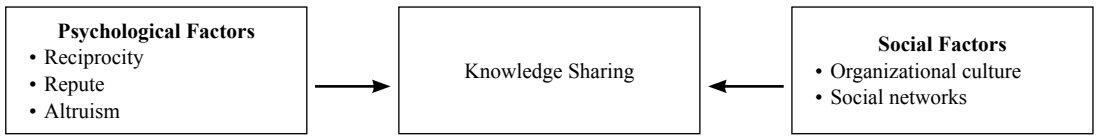
Source: Wiig, K., de Hoog, R., van der Spek, R. 1997. Supporting Knowledge Management: A Selection of Methods and Techniques. *Expert Systems with Applications*. 13 (1). pp. 15 - 27.

Cultural Roadblocks to Knowledge Management Success

Culture has been characterized as the glue that holds organizations together. It can, for instance, be a critical success factor in the execution of strategy. It can play a crucial role in determining the success or failure of operations. At the micro level, there are close relationships between organizational culture, employee satisfaction, and job commitment and turnover. As one might expect, organizational culture plays a pivotal role in knowledge management.

Organizational culture is shaped by many factors, some of which can be changed while others are intractable. Organizations adapt to their external environments by designing responsive structures and systems, adopting relevant technologies, and harvesting appropriate skills and qualities. Though constrained by their external environments, organizations make choices that, collectively, eventually define their cultures. These choices are influenced by the mission, values, and norms of each organization and the assumptions of its leaders. In due course, the choices will also define the success or failure of knowledge management initiatives. Thus, knowledge is inextricably bound to human cognition, and its management will occur within a structured psychological and social context. Figure 11 juxtaposes the psychological and social barriers that impact knowledge sharing.

Figure 11: Barriers Affecting Knowledge Sharing



Source: Author.

Psychological Factors

Knowledge represents a source of power to people. By sharing valuable knowledge with a colleague, one runs the risk of diminishing one's value in an organization; potentially, one is no longer indispensable. There are three conditions under which, as an employee, one will share knowledge: reciprocity, repute, and altruism. One's time and energy are finite and one will more often than not take the time to help a colleague if one is likely to receive valuable knowledge in return, either now or in the future. In addition, it is in one's interest to be viewed as an expert in an organization; if one does not have a reputation for expertise, one's knowledge cannot represent a source of power. Likewise, before sharing, one needs to be certain that colleagues will acknowledge the source of knowledge and will not claim credit for it. But, in a process akin to self-gratification, there is also the need to talk to others about subjects that one finds fascinating and important.

Following resource-based views of organizations, which identify knowledge as potentially the primary source of sustainable competitive advantage, one can imagine that there are internal markets for knowledge within organizations. Knowledge is exchanged between buyers and sellers, with reciprocity, repute, and altruism functioning as payment mechanisms. Trust, however, is an essential condition to the smooth functioning of such a market. This trust can exist at an individual level, through close working relationships between colleagues, or at group and organization levels, by the creation of a cultural context that encourages and rewards knowledge sharing and discourages and penalizes knowledge hoarding.

Social Factors

Organizational culture, and the social networks that frame it, is the most frequently cited roadblock to knowledge management success. Based on understanding of psychological factors, the onus is on leadership to drive people-focused knowledge management and move from old to new knowledge management paradigms. People are more likely to understand and energetically support an initiative when they observe leadership behavior that is both credible and supportive. Box 1 summarizes the differences between what may be termed industrial and knowledge cultures.

Box 1: Industrial and Knowledge Culture Paradigms

Industrial Culture
- Limited information distribution
- Many management levels
- Uneven responsibility
- Rules based
- Structured
- Risk averse
- Inward orientation
- Occasional training
- Financial focus
- Political

Knowledge Culture
- Wide information distribution
- Few management levels
- Shared responsibility
- Principles based
- Unstructured
- Able to take some risks
- Outward orientation
- Continuous learning
- Marketing focus
- Open

Source: Author.

The table below makes observations on organization and culture, and suggests what might lie a little beyond the knowledge culture. One may appreciate that

- cultures are not static (there is movement from left to right);
- individuals who are absorbed in a particular culture tend to find the culture to the right a little meaningless and the culture to the left almost valueless;
- transition from one culture to another is not smooth; and
- the concepts of control, responsibility, and contribution provide interesting analytical links between cultures.

Table: Organization and Culture

	Feudal Culture	Industrial Culture	Knowledge Culture	Creativity Culture
Organization	Territorial	Hierarchies	Networks	Flows
Focus	Land	Profit	Customer	Innovation
Culture	Domination Control	Control Responsibility	Responsibility Contribution	Contribution Creativity
Key Measure	Quantity	Efficiency	Effectiveness	Quality of Life

Source: Author.

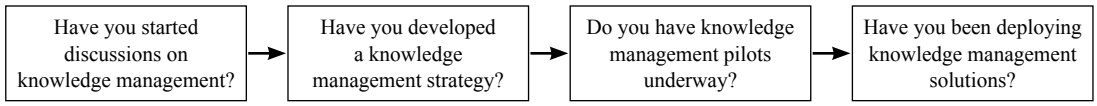
Assessing the Behavior–Performance Continuum

Within any organization there may also be a variety of cultures—shaped by characteristic differences in professional orientation, status, power, visibility, and other factors. Understanding these cultures in terms of their expected behaviors helps to appreciate why organizational units can exhibit behaviors that are opposite to the organization's expressed mission, values, and norms. At a more pressing level, behaviors can also temper what cooperation is displayed in a group. Thus, cultures create behaviors, some of which can result in obstructive (or at least nonconstructive) interactions that limit knowledge sharing and, in the fullness of time, hold back knowledge management. Assessing the behavior-performance continuum of key stakeholders in knowledge management initiatives will spell the difference between success or failure. It transcends the notion of knowledge flows that is fundamental to knowledge management initiatives and has deep implications for fostering ownership among those involved in associated efforts.

Early Pathways to Progress

Figure 12 poses simple questions to locate an organization's progress toward knowledge management. Box 2 highlights early pathways to progress.

Figure 12: Where Are You in the Journey?



Source: Author.

Box 2: Early Signposts to Knowledge Management

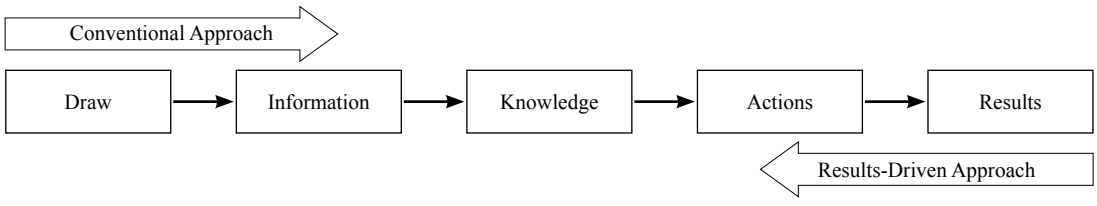
- Knowledge products and services are strategic and must be accounted for and valued accordingly.
- Knowledge management requires integration and balancing of leadership, organization, technology, and learning in an organization-wide setting.
- Knowledge management must both meet the requirements of and conditions for success and the desired benefits and expectations of the organization.
- Organizational culture affects knowledge management, especially at the lower levels.
- Streamlined organizations with strong organizational cultures have a higher chance of success in knowledge management.
- An atmosphere of trust is a precondition to knowledge sharing.
- Proposals for knowledge management should include both soft and hard measures if managers are to support knowledge management initiatives.
- The success factors for knowledge management are dominated by management concerns for people, process, and outcome orientation. They are interspersed throughout the knowledge management architecture of leadership, organization, technology, and learning.

Source: Author.

Getting Results from Knowledge Management

First and foremost, knowledge management is about results. Figure 2 described the typical model of learning progression under which data are analyzed to generate information, information is placed in context to produce knowledge, and evaluated knowledge begets wisdom (or informed actions). However, there are limits to looking upstream and concentrating on the supply of knowledge. It can result in the creation of unfocused data and information whereby strategy is blindly driven by technology. It is also helpful to examine the desired results and deduce what knowledge will be required to accomplish them. Figure 13 demonstrates how awareness of the stages in human learning can be exercised to imbed the relationships between forms of meaning to focus on results. It reinforces the idea that knowledge management is primarily a matter of people, process, and outcome orientation.

Figure 13: A Results-Driven Knowledge Management Model

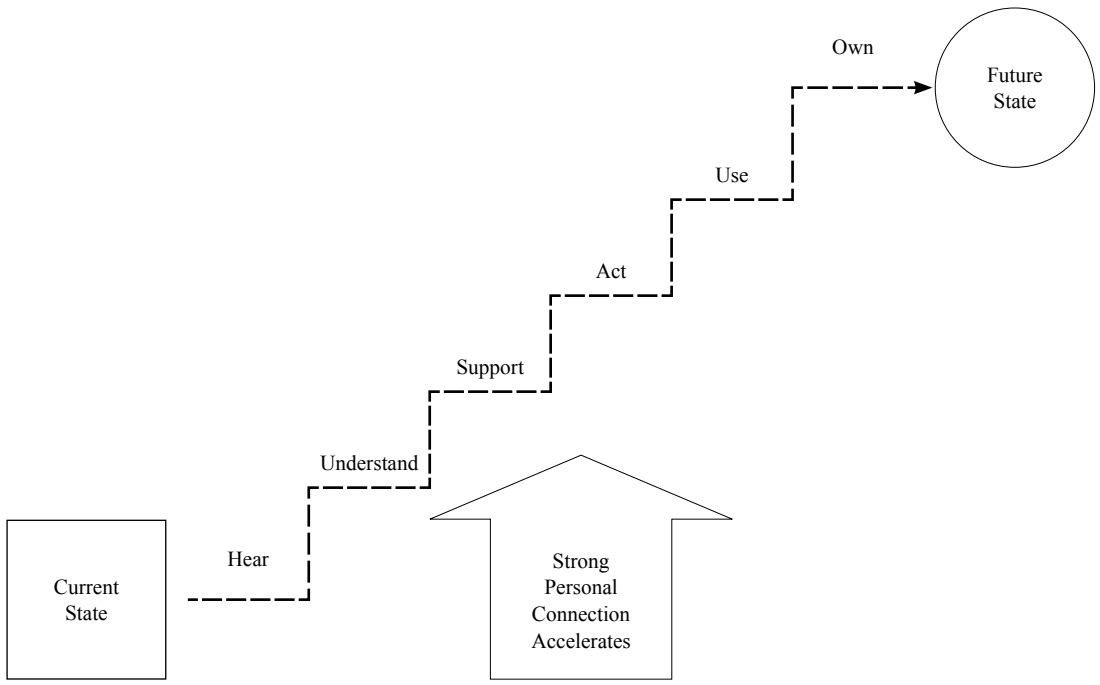


Source: Author.

Building Commitment

As part of an approach to managing change programs, it is helpful to observe the stages that people live through before committing to a new way of working. From simple awareness, they must first hear, then understand the change. Based on the actions of leaders and peers, they then opt to support the change and can be seen to act in the desired manner. Commitment is built when they use the new way of working in regular activities and finally own the change in their environment. At every stage, commitment is fragile and invokes active sponsorship from leaders. Figure 14 illustrates the process of committing to change.

Figure 13: A Results-Driven Knowledge Management Model



Source: Author.

Further Reading

ADB. 2008. *Auditing the Lessons Architecture*. Manila. Available: www.adb.org/documents/studies/auditing-lessons-architecture/in371-07.asp

_____. 2007. *Learning Lessons in ADB*. Manila. Available: www.adb.org/documents/reports/learning-lessons-adb/strategic-framework-2007-2009.asp

For further information

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Knowledge Solutions

Asian Development Bank

ADB, based in Manila, is dedicated to reducing poverty in the Asia and Pacific region through inclusive economic growth, environmentally sustainable growth, and regional integration. Established in 1966, it is owned by 67 members—48 from the region. In 2007, it approved $10.1 billion of loans, $673 million of grant projects, and technical assistance amounting to $243 million.

Knowledge Solutions are handy, quick reference guides to tools, methods, and approaches that propel development forward and enhance its effects. They are offered as resources to ADB staff. They may also appeal to the development community and people having interest in knowledge and learning.

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